ELECTRICAL ENGINEERING IN JAPAN
VOLUME 111
CONTENTS FOR 1991

Number 1

Page

PART A

Electrical and Electronics Materials, Plasma Physics, Nuclear Fusion, Precision Measurement and Instrumentation, Electromagnetic Theory and Nonlinear Oscillation

Influence of Superstructures on Electrical Tree Initiation in Polyethylene, by Naohiro Hozumi, Tatsuki Okamoto, Masayoshi Ishida and Hiromasa Fukugawa 1
Deterioration of Epoxy Resin as a Result of Internal Partial Discharge, by Kaori Fukunaga and Hiroshi Takai 11
An Investigation of AC Corona Pulse and Noise Produced by Needle-to-Plane Gap in Air, by Katsuo Okumura 20

PART B

Electric Machinery, Power Apparatus, Energy Conversion, Magnetohydrodynamics, Electric Railway, Power Systems Planning, Power Distribution and Transmission

A Basic Study on Avoidance of Auto-Parametric Resonance in Power Systems, by Naoto Yorino, Kiyoshi Kubo, Hiroshi Sasaki and Yasuo Tamura 33
Engineering Evaluation of High-T_c Superconducting Cables by Bean Model and Its Assessment of Application to Application to Urban Power System 44
Experiment of 500-W Solid Oxide Fuel Cell, by Susumu Nagata, Yasuhiro Kasuga, Kazutosi Hayasi, Yasuo Kaga, Yosihiro Ohno and Hiroyuki Sato 61
Recovery Characteristics after the Interruption of Fault Arcs in UHV-DC Transmission Lines, by Kinya Sunabe and Tsuginori Inaba 73
Electrode Characteristics of Alkali Metal Thermoelectric Converter, by Toshihisa Masuda, Akira Negishi, Kotaro Tanaka and Takeo Honda 87
Expert System for Initial Stage Restoration from System Blackout of EHV Power System, by Naoto Kakimoto, Bunpin Lin and Muneaki Hayashi 95
ASO and Lightning Protection of MOS-FETs in DC-RF Power Inverters for Medium-Wave Radio Transmitters, by Kazuhisa Hayeiwa and Hiroaki Ikeda 108

PART C

Solid-State Devices, Quantum Electronics, Integrated Circuits Optoelectronics, Information Processing, Communication Systems, Computer Control, Learning Theory and Pattern Recognition

A Study of Learning for Power System Stability Evaluation Using a Framework of Hypothesis-Based Reasoning, by Shouichi Muto, Junichi Yoshizawa, Satoshi Matsuda, Shigeru Tamura, Iwao Matori, Junzo Kawakami, and Yasunobu Kanoh 120

Number 2

Page

PART A

Electrical and Electronics Materials, Plasma Physics, Nuclear Fusion, Precision Measurement and Instrumentation, Electromagnetic Theory and Nonlinear Oscillation

Analysis of the Electric Charge Characteristic in an LDPE Film Under a Needle-Plane Electrode System by Using a TSSP Measurement, by Masahiro Fukuzawa, and Mitsumasa Iwamoto 1
Gauging of Magnetic Vector Potential, by Toshiya Morisue 11
Finite Element Analysis of Three-Dimensional Linear Electromagnetic Fields Over the Whole Frequency Range. Part I. Theory, by Mitsuo Hano 22
Finite Element Analysis of Three-Dimensional Linear Electromagnetic Fields Over the Whole Frequency Range. Part II. Applications, by Mitsuo Hano 29

PART B

Electric Machinery, Power Apparatus, Energy Conversion, Magnetohydrodynamics, Electric Railway, Power Systems Planning, Power Distribution and Transmission

Study of the Optimal Process to EHD Power Generation, by Masaki Sato 37
Impulse Creeping Discharge Characteristics in the Neighborhood of Insulator Supporting Point of Areal Insulated Wires, by Toshiyuki Nishi, Hitoshi Sakurano, Ryozo Ishibashi, and Takeshi Takashima 49
Model-Based Diagnostic Reasoning and Its Application to Network Fault Diagnosis, by Kenji Komai, Keinosuke Matsumoto, and Toshiaki Sakaguchi 60
An Expert System for Prevention of Abnormal Event Recurrence in Nuclear Power Plants, by Takuya Nishiyama, Yasushi Shinohara 71
Fuzzy and Optimal Combined Control for Stabilizing Power Systems, by Atsushi Ishigame, Takahiro Imoto, Shuunji Kawamoto, and Tsuneo Taniguchi 86

PART C

Solid-State Devices, Quantum Electronics, Integrated Circuits, Optoelectronics, Information Processing, Communication Systems, Computer Control, Learning Theory and Pattern Recognition

High-Power (500-kW) CW Magnetron for Microwave Heating, by Chokichiro Shibata, Hideaki Tamai, Tsutomu Tanaka, and Motomu Wakamatsu 94

Number 3

PART A

Electrical and Electronics Materials, Plasma Physics, Nuclear Fusion, Precision Measurement and Instrumentation, Electromagnetic Theory and Nonlinear Oscillation

Development of New Method for Measuring AC Dissipation Current in Dielectric Materials, by Tetsuroh Tokoro, Masayuki Nagao, and Masamitsu Kosaki 1
High-Field Dielectric Properties of Polypropylene Films in High-Temperature Region, by Tetsuroh Tokoro, Kazuyuki Tohyama, Mamoru Takusagawa, Masayuki Nagao, and Masamitsu Kosaki 10

Page

Control of SF_6 Discharge Cap Switch by XeCl Excimer Laser, by Hisato Okuda, Kazuhisa Katayama, Xiaojun Wang, Katsumi Masugata, and Kiyoshi Yatsui 46
A New Type of Low-Loss, Strong-Field RF Coil for Commercial Nuclear Fusion, by Shigetaka Ikegami 52
A Study on Grounding in the Vicinity of the Work Site on 1000-kV Power Transmission Line. Part 1. Electrostatic Induction and Its Protection, by Masayuki Yoshioka and Satoshi Kitamura 60
Adaptive Mesh Generation for Two-Dimensional AC Magnetic Field Analysis by Finite-Element Method, by Yoshinori Saito, Yasuko Uyeda, and Shinzou Ogura 69
Excitation Control under Early Valve Actuation of Turbine, by Naoto Kakimoto, Tutomu Yoneda, Muneaki Hayashi, and Hiroaki Sugihara 77
Studying on Grounding in the Vicinity of the Work Site on 1000-kV Power Transmission Line. Part 2. Electromagnetic Induction and Its Protection, by Masayuki Yoshioka and Satoshi Kitamura 88

PART C

Solid-State Devices, Quantum Electronics, Integrated Circuits, Optoelectronics, Information Processing, Communication Systems, Computer Control, Learning Theory and Pattern Recognition

Semiconductor Thermoelectric-Energy Conversion Systems Working at Low Temperature Differences, by Yoshitaka Ikeda, Jiroh Itsumi, and Nobuo Haneji 99
Fault Location System for Electric Power Transmission Lines Based on Fuzzy Knowledge Base, by Katuyuki Urasawa, Hitoshi Kanoh, Kimiharu Kanemaru, and Kouichi Sugiyama 108
A New Method for Power Generation Planning and Problems of Uncertainty, by Yasumasa Fujii and Yoichi Kaya 120

PART D

Industrial Applications

Input Layer Optimization of Neural Networks by Sensitivity Analysis and Its Application to Recognition of Numerals, by Hiroshi Takenaga, Shigeo Abe, Masao Takato, Masahiro Kayama, Tadaaki Kitamura, and Yoshiyuki Okuyama 130

Number 5

PART A

Electrical and Electronics Materials, Plasma Physics, Nuclear Fusion, Precision Measurement and Instrumentation, Electromagnetic Theory and Nonlinear Oscillation

Ultralow Resistivity in the Surface Direction of LB Heterofilms, by Taro Hino and Masahito Kushida 1
Verification of the Fracture Mechanism of β"-Aluminas Caused by Large Current Density, by Masaaki Ohshima, Akira Kobayashi, Akihiko Yoshida, and Hiromochi Tsuji 11

PART B

Electric Machinery, Power Apparatus, Energy Conversion, Magnetohydrodynamics, Electric Railway, Power Systems Planning, Power Distribution and Transmission

A Switching Operation Based Voltage Drop and Capacity Constrained Load Measurement Algorithm for Distribution Systems, by Kenichi Aoki, Kiochi Nara, Taiji Satoh, and Hijiro Kuwabara 24
Study of a Future Metropolitan Electric Network Adapted to Introduction of Cryogenic High-Power Cables, by Naoki Kayakawa, Yukio Kito, and Toshiro Matsumura 38
Coal-Gas-Burning High-Efficiency Power Plant Which Recovers Generated Carbon Dioxide, by Pyong Sik Pak, Ken'ichi Nakamura, and Yutaka Suzuki 49
Classification and Analysis of Voltage Stabilities in Power Systems, by Naoto Yorino, Yoshihiko Masuda, Hiroshi Sasaki, Kazuhiro Nishikame, Yasuo Tamura, Minoru Kitagawa, and Akira Ohshimo 60

Page

Experimental Analysis of Lightning Overvoltages Induced on Low-Voltage Distribution Lines, by Yasutomo Imai, Hachiro Tsuchihashi, Akira Asakawa, and Shigeru Yokoyama . 72
Development of Advanced Generator Excitation Control Regulator (PSVR) for Improving Voltage Stability of a Bulk Power Transmission System, by Tsutomu Michigami, Naganori Onizuka, and Satoshi Kitamura 83
Analysis, and Evaluation of Integrated Energy System, by Ryuji Matsuhashi, Takehito Hayashi and Yoichi Kaya 97

PART C

Solid-State Devices, Quantum Electronics, Integrated Circuits, Optoelectronics, Information Processing, Communication Systems, Computer Control, Learning Theory and Pattern Recognition

Methods to Build Neural Networks for Evaluation of State Variable Patterns, by Kazuo Nishimura, Miho Kawaski, and Tsuyoshi Shimada 108

PART D

Industrial Applications

Output Voltage Control Method of PWM-Controlled Cycloconverters with Space Vectors, by Akio Ishiguro, Takeshi Furuhashi, Shigeru Okuma, Yoshiki Uchikawa, and Muneaki Ishida 117
Calculation of Uncharacteristic Harmonics of a Three-Phase Bridge Rectifier with DC Current Ripple, by Masaaki Sakui and Hiroshi Fujita 127
Magnetic Frequency Tripler with Symmetrical Core-Type Zero-Phase Sequence Circuit, by Hirokazu Suzuki and Mutsuo Takokoro 130

Number 6

PART A

Electrical and Electronics Materials, Plasma Physics, Nuclear Fusion, Precision Measurement and Instrumentation, Electromagnetic Theory and Nonlinear Oscillation

Preparation of Y-Ba-Cu-O Tapes by Pyrolysis of Organic Acid Salts, by Takeo Shiono, Takao Nakamoto, and Hiroyuki Nasu 1
Experiments on Dependency of Metal Mixing Ratio in Ag-Pd Alloy Contacts on Breaking Arc Duration, Metal Erosion and Transfer, by Hiroyuki Ishida, Hideaki Sone, and Tasuku Takagi 7
Effect of Plasma Surface Modification on Electrical Conduction in Polyethylene, by Hisaaki Hayashi, Toshiki Nakano, and Yoshimichi Ohki 17

PART B

Electric Machinery, Power Apparatus, Energy Conversion, Magnetohydrodynamics, Electric Railway, Power Systems Planning, Power Distribution and Transmission

Development of a Knowledge-Based System for Voltage/Reactive Power Operation Planning, by Yoshiyuki Kono, Atsushi Doi, and Yuichi Omichi 25
Increase of Breakdown Voltage due to Composite Insulation in SF_6 Gas, by Tetsuo Yoshida, Masaru Miyagawa, Iwao Ohshima, Nobuo Masaki, and Satoru Yanabu 36
Load Frequency Control Using Power Demand Estimation and Fuzzy Control, by Vichit Avatchanakorn, Akihiko Ueda, Yasuyuki Gotoh, and Yoshibumi Mizutani 47
Analysis of Lightning Surge Overvoltages at Substation Using Steady-State Solution, by Akihiro Ametani and Hironori Ohnishi 58
Development of Extruded Ethylene Propylene Rubber Insulated Superconducting Cable, by Masamitsu Kosaki, Masayuki Nagao, Yukio Mizuno, Noriyuki Shimizu, and Kenji Horii 67

Page

PART D

Industrial Applications

DSP-Based Real Time Output Waveform Synthesis for Three-Phase PWM Inverter, by Kiyoshi Ishihara and Atsuo Kawamura 76
Fundamental Characteristics of a Brushless and Self-Excited Sinusoidal-Wave Single-Phase Synchronous Generator Having a Two-Phase Field Winding Excited by a Half-Wave Rectified Current, by Fukuo Shibata and Nobuyuki Naoe 88
Adaptive Flux Observer of Induction Motor and Its Stability, by Hisao Kubota and Kouki Matsuse 97
Fuzzy Hybrid Control of DC Servomotor, by Nobutomo Matsunaga and Shigeyasu Kawaji . 105
A Servo System with Engine Actuator, by Hisato Kobayashi and Toru Fukushima 112
Motion Control of Flexible Joint, by Kenji Kaneko and Kouhei Ohnishi 118
Continuous Deadbeat Control, by Ryoichi Kurosawa 127
Adaptive Force Control of Direct Drive Motor for Force Sensor Stiffness Compensation, by Toshio Fukuda and Fumihito Arai 135

Number 7

PART A

Electrical and Electronics Materials, Plasma Physics, Nuclear Fusion, Precision Measurement and Instrumentation, Electromagnetic Theory and Nonlinear Oscillation

An Application of the Residual Voltage for Diagnoses for Detecting Irradiated Degradation of Insulating Materials, by Sanshiro Yamanaka, Takashi Kabeya, Tadashi Fukuda, Goro Sawa, Masayuki Ieda, Masayuki Ito, and Waichiro Kawakami . . 1
High-Electric Field Conduction Phenomena in Poly-2-Chloro-p-Xylylene/Poly-p-Xylylene Composite Thin Films, by Tatsuo Mori and Teruyoshi Mizutani 10

PART B

Electric Machinery, Power Apparatus, Energy Conversion, Magnetohydrodynamics, Electric Railway, Power Systems Planning, Power Distribution and Transmission

A Method for Locating Fault Section by Using Sequential Information at Substations, by Tadahiro Goda, Sumie Kyomoto, and Morikazu Takegaki 17
On-Line Preventive Control for Power System Transient Stability Based on the Energy Function Method, by Hirokuyi Kita, Ken-Ichi Nishiya and Jun Hasegawa 30
Direct Calculation of Voltage-Stability Limit of Electric Power Systems, by Mamoru Suzuki and Ken Masegi 40
Decentralized Load Frequency Control on Each Power Plant, by Eiichi Tanaka and Jun Hasegawa 50
Barrier Effect under Nonuniform Field in Atmospheric Pressure SF_6 Gas, by Masaru Miyagawa, Tetsuo Yoshida, Nobuo Masaki, Shiro Ohtake, and Iwao Ohshima 60
A Prediction Method of Audible Noise and Radio Noise Generated from HVDC Transmission Line with 4×3.84 cm Conductor Bundles, by Yukio Nakano and Yoshitaka Sunaga 68
A Flashover Model Using a Nonlinear Inductance, by Naoto Nagaoka 78

PART C

Solid-State Devices, Quantum Electronics, Integrated Circuits, Optoelectronics, Information Processing, Communication Systems, Computer Control, Learning Theory and Pattern Recognition

Fault Location for Transmission Lines Using Inference Model Neural Network, by Hitoshi Kanoh, Masahisa Kaneta, and Kimaharu Kanemaru 84
Zero Magnetic Field Type Magnetic Field Sensor, by T. Sonoda and R. Ueda 94

Page

PART D

Industrial Applications

Three-Phase Voltage-Fed Type PWM Power Converter via Power Factor Control, by Tokuo Ohnishi 104
Robust Stabilization of a Magnetic Suspension System Using H^{∞} Control Theory, by Fumio Matsumura, Masayuki Fujita, and Masanao Shimizu 117
An Application of Model Following Servo (MFS) Control to Vector Controlled Induction Motor Drive Systems, by Mineo Tsuji, Katsuhiro Izumi, and Jun Oyama . . 125